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UNDERWATER IMAGING SYSTEM

ABSTRACT OF THE DISCLOSURE

An imaging system for detecting the contents of a turbid medium, such as water or air, which is at least partially transmissive of light. The system includes a light source for producing a series of discrete fan-shaped pulse beams which are substantially uniform in intensity or have been peaked at the edges of the fan to illuminate sections of the medium, a streak tube with a large photocathode for collecting the maximum amount of light from weak returns, a field-limiting slit disposed in front of the photocathode for removing multiply scattered light, a large aperture optical element for collecting and focusing the reflected portions of the pulse beam on the field-limiting slit and the photocathode, and an array of detectors. A volume display of the medium is generated by translating the transmitter and receiver normal to the longitudinal axis of the pulse beam to illuminate adjacent sections of the medium, and combining the sections to provide a volume display. All, or substantially all, of the light returned from each pulse beam is utilized. Vehicle motion is used to provide the scan of the pulse beam.